

Instructions for RC Circuits I Lab

We are doing the following parts today:

- Part A: (Q-1) and (Q-2) only.
- Part B: (Q-4) only.
- Part C: (Q-8), (Q-9), (Q-10), and (Q-11).

For Part A, you will make 3 graphs on one page, stacked one on top of the other (equal times line up), just like last week's Diode Lab.

For Part B, you need only verify the “half-life” property for the V_C vs. t graph. Check both the charging and discharging part of the graph. You do not need to make a separate graph.

For Part C:

- Make an accurate plot of V_C vs. t in your lab notebook (discharging curve only, full page), and use this graph to determine τ_1 and calculate C_1 .
- With C_1 still in the circuit, use cursors to determine τ_1 , and compare this value with the value you obtained using your graph. Don't use the discrepancy test — you simply need to convince yourself (and me) that you are measuring the time constant correctly.
- Now exchange C_1 for C_2 in the circuit and use cursors to determine τ_2 and calculate C_2 . *You do not have to plot a graph for this part.*
- Now put C_1 and C_2 in parallel and use cursors to determine τ_{12} and calculate C_{12} . *You do not have to plot a graph for this part.*
- Compare C_{12} with the appropriate combination of C_1 and C_2 using a percent difference. The percent difference should be less than 5%.

Next week's RC Circuits II Lab will be replaced by the completion of Oscilloscope I (parts C, D, and E).